Marine Physical Laboratory

Vertical Source Array Development

W. S. Hodgkiss

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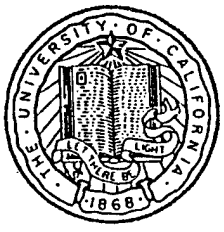

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William S. Hodgkiss

Final Report to the
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Abstract

Initial testing of prototype transducers for a vertical source array has been completed along with the design of a 600 m umbilical cable and calculation of the transducer tuning requirements.

Research Objective

The objective of this project was to assist NRaD in the design and development of a vertical source array.

Research Summary

The traditional approach in active surveillance has been to use one or a few high power transmitting sources to couple acoustic energy into the water column. When arranged as a vertical array of sources, the total aperture typically has been only a few wavelengths. As a consequence, the radiation pattern has significant sidelobes which intersect the sea surface and bottom and reverberation (scatter) from these boundaries is a major inhibitor to target detection. One approach to reducing the amount of energy ensonifying the boundaries is to utilize a vertical source array

with full water column aperture and thus better control over the radiation pattern.

The focus of this effort was twofold. First, MPL assisted NRaD in initial testing of the prototype transducers to be used in the vertical source array. Second, MPL carried out the 600 m umbilical cable design and the transducer tuning requirements for the vertical source array. These calculations were provided to NRaD in [1].

References

[1] G.E. Edmonds, "FWCA Design Review" (Presentation to NRaD, 25 March 1994).

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